DATE: 5/09/2006

INVITATION TO BID
THIS IS NOT AN ORDER

BID NO.: 50-00079435

JEFFERSON PARISH

PURCHASING DEPARTMENT
P.O. BOX 9
GRETNA, LA. 70054-0009
504-364-2678

VENDOR:

BUYER: R. Poole

BIDS WILL BE RECEIVED IN THE PURCHASING DEPARTMENT, SUITE 4400, JEFFERSON PARISH GENERAL GOVERNMENT BUILDING, 200 DERBIGNY STREET, GRETNA, LA 70053 UNTIL 2:00 PM, 6/01/2006 AND PUBLICLY OPENED UPON COMPLETION OF ADMINISTRATIVE TASKS.

LATE BIDS WILL NOT BE ACCEPTED

NOTE: ONLY BIDS WRITTEN IN INK OR TYPEWRITTEN, AND PROPERLY SIGNED BY A MEMBER OF THE FIRM OR AUTHORIZED REPRESENTATIVE, WILL BE ACCEPTED. PENCIL AND/OR PHOTOSTATIC FIGURES OR SIGNATURES DISQUALIFY BID.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

THE FOLLOWING INSTRUCTIONS APPLY TO ALL BIDS

All bids submitted are subject to these instructions and general conditions and any special conditions and specifications contained herein, all of which are made part of this bid proposal reference. THIS BID PACKAGE MUST BE RETURNED IN ITS ENTIRETY.

Questions on this bid are to be faxed to (504) 364-2693 no later than FIVE (5) working days prior to bid opening. Bid numbers should be mentioned in all requests.

The purpose and intention of this invitation to bid is to afford all suppliers an equal opportunity to bid on all construction, maintenance, repair, operating supplies and/or equipment listed in this bid proposal. JEFFERSON PARISH will accept one bid only from each vendor. Items bid must meet or exceed specifications.

JEFFERSON PARISH will accept one price for each item unless otherwise indicated. Two or more prices for one item will result in bid rejection.

If the bid exceeds $20,000.00 and the bidder is an agency, corporation, partnership, or other legal entity, the president, vice-president, secretary/treasurer, or an authorized agent, shall sign the proposal, and satisfactory evidence of the authority of the person signing for the agency, corporation, partnership, or other legal entity shall be attached to the proposal.

AWARD OF CONTRACT: JEFFERSON PARISH reserves the right to award contracts or place orders on a lump sum or individual item basis, or such combination, as shall in its judgment be in the best interest of JEFFERSON PARISH. Every contract or order shall be awarded to the LOWEST RESPONSIBLE BIDDER, taking into consideration the CONFORMITY WITH THE SPECIFICATIONS and the DELIVERY AND/OR COMPLETION DATE.

Preference is hereby given to materials, supplies and provisions produced, manufactured or grown in Louisiana, quality being equal to articles offered by competitors outside the state. "LSA-R.S.38:2251-2261"

USE OF BRAND NAMES AND STOCK NUMBERS: Where brand names and stock numbers are specified, it is for the purpose of establishing certain minimum standards of quality. Bids may be submitted for products of equal quality, provided brand names and stock numbers are specified. Complete product data may be required prior to award.

PRICES: All prices shall be quoted in the unit of measure specified, and unless otherwise specified, shall be exclusive of State and Parish taxes. As per LSA-RS 47:301 et seq., all governmental bodies are excluded from payment of sales taxes to any Louisiana taxing body. All quotations shall be based on F.O.B. Agency warehouse or job site, anywhere within the Parish as designated by the Purchasing Department.

CANCELLATION OF CONTRACT: JEFFERSON PARISH reserves the right to cancel all or any part if not shipped promptly. No charges will be allowed for parking or cartage unless specified in quotation. The order must not be filled at a higher price than quoted. JEFFERSON PARISH reserves the right to cancel any contract at anytime and for any reason by issuing a THIRTY (30) day written notice to the contractor.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

JEFFERSON PARISH requires a firm price. Quoted price will remain firm until _____

For good cause and as consideration for executing a contract with Jefferson Parish, vendor conveys, sells, assigns and transfers to Jefferson Parish or its assigns all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of Louisiana, relating to the particular good or services purchased or acquired by Jefferson Parish.

Quantities listed are for bidding purposes only. Actual requirements may be more or less than quantities listed.

Bidders are not to exclude from particpation in, deny the benefits of, or subject to discrimination under any program or activity, any person in the United States on the grounds of race, color, national origin, or sex; nor discriminate on the basis of age under the Age Discrimination Act of 1975, or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973, or on the basis of religion, except that any exemption from such prohibition against discrimination on the basis of religion as provided in the Civil Rights Act of 1964, or Title VI and VII of the Act of April 11, 1968, shall also apply. This assurance includes compliance with the administrative requirements of the Revenue Sharing final handicapped discrimination provisions contained in Section 51.55 (c), (d), (e), and (k)(5) of the Regulations.

New construction or renovation projects must comply with Section 504 of the 1973 Rehabilitation Act, as amended, in accordance with the American National Standard Institute's specifications (ANSI A117.1-1961).

RESPONSE TO INVITATION: If your company is unable to bid on this request, please state your reason on bid form, and return to this office before bid opening date. Failure to do so may result in the removal of your company from all future bids.

The general specifications for construction projects and the purchase of materials, services and/or supplies are those adopted by the JEFFERSON PARISH Council by Resolution No. 95466, dated January 23, 2002. The general conditions adopted by this resolution shall be considered as much a part of this document as if they were written wholly herein. A copy may be obtained from the Office of the Parish Clerk, Suite 6700, Jefferson Parish General Government Building, 200 Derbigny Street, Gretna, LA 70053.

POSTING OF BIDS: Non-Advertised bids will be posted on bulletin board outside of Suite 4400, Jefferson Parish General Government Building, Gretna, LA, for a period of Five (5) working days after opening date.

Advertised bids will be tabulated and a copy forwarded to each responsive bidder.

ADDITIONAL REQUIREMENTS FOR THIS BID

PLEASE MATCH THE NUMBERS PRINTED IN THIS BOX WITH THE CORRESPONDING INSTRUCTIONS BELOW.

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1. All bidders are invited to attend the pre-bid conference. Failure to attend the pre-bid conference shall not relieve the bidder of responsibility for information discussed at the conference. This conference is held to allow questions to be answered and inspect the site with owner's representative, etc. Failure to attend the pre-bid conference and inspection does not relieve the successful bidder from the necessity of furnishing materials or performing any work that may be required to complete the work in accordance with the specification (with no additional cost to the owner).

2. Contractor must hold current applicable JEFFERSON PARISH licenses with the Department of Inspection and Code Enforcement. Contractor shall obtain any and all permits required by the JEFFERSON PARISH Department of Inspection and Code Enforcement. The contractor shall be responsible for the payment of these permits. All permits must be obtained prior to the start of the project.

3. A Louisiana state contractor's license may be required in accordance with LSA-R.S. 37:2150 et seq.

4. It is the bidder's responsibility to visit the job site and evaluate the job before submitting a bid.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

5. Job site must be clean and free of all litter and debris daily and upon completion of the contract. Passageways must be kept clean and free of material, equipment, and debris at all times. Flammable material must be removed from the job site daily because storage will not be permitted on the premises. Precautions must be exercised at all times to safeguard the welfare of JEFFERSON PARISH and the general public.

6. All awards in excess of $5,000.00 for the construction, alteration, or repair of any public works will be reduced to a formal contract which shall be recorded at the contractor's expense. A price list of recordation costs may be obtained from the Clerk of Court and Ex-officio Recorder of Mortgages for the Parish of Jefferson. All awards in excess of $25,000.00 reduced to formal contract will require a performance bond.

7. A performance bond will be required for this bid. The amount of the bond will be 100% of the contract price unless otherwise indicated in the specifications. Performance bond shall be supplied at the signing of the contract.

8. Please indicate if you have insurance: YES _____ NO _____
Successful bidder will be required to furnish proof of insurance to this office.
Successful bidder will be required to furnish Federal I.D. Number.

9. Minimum insurance requirements for this bid are as indicated on the attached sheet.

10. Each bid must be accompanied by a cashier's check, certified check, money order, or surety bid bond in the amount of 5% of the bid.

11. Affidavit required to be submitted with bids on all solicitations for construction, alteration or demolition of public building or project. (LSA-R.S. 38:2224)

12. This is a requirements contract to be provided on an as needed basis.

13. Indicate if price will hold firm for _____ year(s) from date of contract or blanket purchase order:

    YES _____ NO _____

    If price is not firm, escalation must be clearly defined below as to maximum % increase anticipated and if bid is accepted, any increase thereafter must be supported in writing to the JEFFERSON PARISH Purchasing Department.

    QUOTED PRICE WILL REMAIN FIRM UNTIL DATE: _____

    WITH MAXIMUM ESCALATION PERCENTAGE OF: _____

    FROM DATE OF: _____ TO DATE OF: _____

    but in no event to exceed the change in the United State Bureau or Labor Statistics Consumer Price Index and/or Wholesale Price Index during the contract period. See LSA-R.S. 38:2212 A (2).

    In the event that the successful bidder cannot furnish a specific item or material and labor in the required time, JEFFERSON PARISH may purchase on an emergency basis from the next lowest bidder, or available source, until such time as the successful bidder has notified the PARISH in writing that his stock or labor capability has been replenished. The difference in price will be charged against the successful bidder of this contract, and evidence of purchases and price will be provided.

14. Vendor will be required to submit to the chief buyer of the JEFFERSON PARISH Purchasing Department a quarterly usage report by item of all items listed on this proposal.

15. Freight charges should be included in total cost when quoting. If not quoted FOB DELIVERED, freight must be quoted as a separate item. Bid may be disqualified if not quoted FOB DELIVERED or if freight charges are not indicated on bid form.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

DELIVERY: FOB JEFFERSON PARISH

INDICATE DELIVERY DATE ON EQUIPMENT AND SUPPLIES _____

INDICATE STARTING TIME (IN DAYS) FOR CONSTRUCTION WORK _____

INDICATE COMPLETION TIME (IN DAYS) FOR CONSTRUCTION WORK _____

LOUISIANA CONTRACTOR'S LICENSE NO.: (if applicable) _____

*** ALL BIDDERS MUST COMPLETE SECTION BELOW ***	
FIRM NAME:	
SIGNATURE: (Must be signed here)	TITLE:
PRINT OR TYPE NAME:	
ADDRESS:	
CITY, STATE:	ZIP:
TELEPHONE: ( )	FAX: ( )
EMAIL ADDRESS:	

TOTAL PRICE OF ALL BID ITEMS: $ _____

THIS BID MUST BE SIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE COMPANY/FIRM FOR BID TO BE VALID. BID PACKAGE, INCLUDING INSTRUCTIONS AND SPECIFICATIONS, MUST BE RETURNED IN ITS ENTIRETY FOR BID TO BE VALID. SIGNING INDICATES YOU HAVE READ AND COMPLY WITH THE INSTRUCTIONS AND CONDITIONS.

NOTE: All bids should be returned with the **bid number and bid opening date** indicated on the outside of the envelope submitted to the Purchasing Department.

INVITATION TO BID FROM JEFFERSON PARISH - continued

BID NO.: 50-00079435

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
			A QUANTITY OF SELF PRIMING PUMPS AND RELATED ITEMS FOR THE JEFFERSON PARISH DEPARTMENT OF PUBLIC WORKS SEWERAGE		
1	2	ON	0010 - 6" x 6" HYDROMATIC HORIZONTAL SELF-PRIMING PUMPS OR EQUAL		
2	2	ON	0020 - PUMP BASES WITH BELT DRIVE AND BELT GUARD (OR EQUAL)		
3	2	ON	0030 - 20 HP 460/3/60 TEFC MOTORS OR EQUAL		
4	1	ON	0040 - TESCO PUMP CONTROL PANEL W/SCADA, ANTENNA & SPARE LIQ V CONTROLLER OR EQUAL		
5	1	ON	0050 - HYDROMATIC SUMP PUMP OR EQUAL See attached specifications		

SELF-PRIMING NON-CLOG SEWER PUMPS

1.01 GENERAL

A. Vendor shall furnish equipment and incidentals required to provide 2 V-belt driven driven horizontal self-priming non-clog centrifugal sewage and trash pumps as specified herein. Pumps shall be as manufactured by Hydromatic Pumps or equal.

The pump shall be Hydromatic model 60RPD and shall be capable of handling a 3 inch solids and have a 125 lb. flanged 6 inch suction inlet and a 125 lb. flanged 6 inch discharge outlet. Pumps shall be offered by factory authorized sales agents only.

2.01 OPERATING CONDITIONS

A. Each pump shall be capable of pumping raw unscreened sewage or trash and properly selected to perform at these operating conditions:
   Capacity, in GPM 575
   Total dynamic head, in feet 17
   Maximum static suction lift, in feet 20
   Design pump efficiency of 65 %
   The pump will operate at a speed of 650 R.P.M.
   Pump motor horsepower 10 H.P. Pump motor R.P.M. 1750.

B. The motors shall be horizontal, 10 HP, T.E.F.C. induction type with normal starting torque and low starting current characteristics selected for the available local electrical service, 3 Phase, 60 Hertz, 230/460 Volt. Motors shall be non-overloading at the design pump operating conditions or at any head throughout the pump operating range.

C. Each motor shall be of current NEMA design. Motors shall be equal in construction to NEMA design 'B', with class "B" insulation, 40° "C" ambient temperature rise, steel frame, ball bearing and rated for continuous duty. Motor shall have a 1.15 service factor.

D. The performance curve submitted for approval shall state, in addition to head and capacity, pump efficiency, solid handling capability, brake horsepower, impeller speed and net positive suction head required by the pump (NPSH).

3.01 PUMP BASE

A. The pump shall be mounted on a fabricated steel base and connected to the motor with a V-belt drive. Base is to be constructed so that the motor can be moved to adjust the motor to pump alignment without disturbing the pump or piping. The unit base shall be comprised of a base, perimeter flange and reinforcements. Perimeter flange and reinforcements shall be designed to prevent flexing or warping under all operating conditions. Perimeter flange shall be drilled for hardware used to secure the unit base to a concrete pad.

B. Base shall be constructed to mount the motor shaft above the pump shaft and incorporate a belt guard.

4.01 CONSTRUCTION

A. The pump volute case, suction elbow, priming port housing, suction and discharge connections, bearing frame assembly and priming cover shall be high quality gray cast iron, ASTM A-48, Class 30 or better. In addition the three internal wearing parts of impeller, wear plate and lip plate shall be made of high quality 65-45-15 ductile iron. All external mating parts shall be machined and Buna-N Rubber O-ring sealed on a beveled edge. Gaskets shall not be acceptable.

4.02 INLET SUCTION ELBOW

A. Inlet suction elbow and wear plate shall be removable as a unit so that all parts of the pump case, including the priming port, shall be accessible for cleaning and inspection without removing the suction or discharge piping. The wear plate shall be bolted to the inlet elbow. Units which do not have a replaceable suction wear plate shall not be acceptable.

4.03 PRIMING PORT HOUSING

A. A suction type flapper check valve shall be installed in the priming port housing. It shall consist of a flapper valve bracket, stainless steel shaft and bearings, and a Buna-N check valve gasket attached to the flapper bracket with a bolt, washer, weight and nut. The priming cover handle and priming cover arm are to be cast iron.

B. The flapper must be accessible through the top priming port so that it can be removed or installed with the pump volute full of liquid without loss of liquid. The flap valve assembly shall be capable of being removed or replaced without draining the pump case, removing the suction elbow or disturbing the piping connections.

4.04 SEALS

A. The pump shall have two identical and completely separate mechanical seals, mounted in tandem, with a separate oil chamber between the seals. The pump shall be operatable with either the inner or outer seal removed. John Crane Type 21, BF1 C1, seals shall be used with the rotating seal faces being carbon and the stationary seal faces to be ceramic. The inner seal shall be replaceable without disassembly of the seal chamber and without the use of special tools. The inner seal shall be accessible by removing the suction inlet elbow and impeller. Pump-out vanes shall be present on the backside of the impeller to keep contaminants out of the seal area. Units, which use a single mechanical seal shall not be acceptable. Seals shall be locally available.

B. There shall be an oil chamber between the outer seal and the inner seal with a drain plug opening so that the oil consistency may be periodically checked for contamination to determine if inner seal failure has occurred.

C. Units equipped with opposed mechanical seals shall not be acceptable.

D. The unit shall be equipped with a stainless steel shaft sleeve under the inner seal to prolong the shaft life by eliminating the possibility of scoring the shaft, should the inner seal fail.

E. Replacement of the seals shall be accomplished without disturbing the suction or discharge piping.

4.05 IMPELLER

A. Impeller shall be of the two-vane, semi-open, non-clog design and have pump-out vanes on the backside to prevent grit and other materials from collecting in the seal area.

B. Impeller shall be pressed on to a tapered shaft and keyed. A 300 series stainless steel screw and washer shall lock impeller against reverse rotation on the shaft. Imellers that are threaded on will not be acceptable to the tapered fit design.

C. Impeller clearance shall be externally adjustable without the use of shims or requiring the disassembly of the pump unit. Adjustment shall be accomplished by means of jacking or adjustment bolts located at the end of the bearing housing rotating assembly. Units which do not allow for adjustment of the impeller by external means shall not be acceptable.

4.06 LIP PLATE

A. Impeller shall be used in combination with a replaceable volute lip plate. Where impeller is of full diameter, a flat back plate shall be provided. Where impeller trim is required, a volute lip plate shall be used in combination so as not to lose priming efficiency. Pump shall be capable of operating with various matched impeller trim / lip plate combinations without disturbing the volute case. The flat back plate or volute lip plate, shall be replaceable for renewed efficiency.

4.07 WEAR PLATE

A. The replaceable wear plate is held to the suction elbow by two Allen head screws. The clearance set between the wear plate and impeller shall be maintained at 15 thousandths (.015). Replacement of the wear plate, impeller and inner seal shall be accomplished through the removable suction elbow.

4.08 BEARING HOUSING

A. A cast iron bearing housing shall be utilized for the rotating assembly. The bearing housing shall support the shaft and two roller type ball bearings. Bearings shall be grease lubricated, locally available, and sized for a minimum B10 life of 20,000 hours for normal operations. Bearing shall be sized to withstand all radial and thrust loads, which can reasonably be expected during normal operations.

B. The fifteen-thousandths clearance between the impeller and wear plate shall be externally adjustable without the use of shims, or requiring disassembly of the pump unit. The outboard bearing is locked into a moveable end cap, so the impeller clearance can be made by adjustment of jacking bolts located at the end of the bearing housing rotating assembly.

C. The bearing housing assembly, which includes the bearings, shaft, seals and impeller, shall be removable as a unit without disturbing the pump volute or piping.

5.01 WARRANTY

A. The pump unit or any part thereof shall be warranted against defects in material or workmanship within one year from date of installation or 18 months from date of manufacture, whichever occurs first. Defective part shall be replaced at no charge with a new or remanufactured part, F.O.B. factory or authorized warranty service station. The warranty shall not assume responsibility for removal, reinstallation or freight, nor shall it assume responsibility of incidental damages resulting from the failure of the pump to perform. The warranty shall not apply to damage resulting from accident, alteration, design, misuse or abuse.

JEFFERSON PARISH
DUPLEX PUMP CONTROL PANEL
SPECIFICATION

CONTROL PANEL

Furnish all equipment as specified in a low profile (36" max. height), U.L. 508 listed, weatherproof, freestanding, NEMA 3RX panel with drip shield. Enclosure shall be furnished with hinged dead front interior and exterior doors. Outer enclosure shall be constructed of 14 gauge, 316 stainless steel. Enclosure shall include integral provisions for utility metering when required. Doors shall be equipped with 316 stainless steel polished handles with 3-point roller bearing latches and hasps for owner padlocks. All interior mounting hardware shall be stainless steel. A lightning/surge arrestor shall be furnished to protect the panel equipment from lightning and utility power surges. Provide fluorescent panel light, door switch, GFCI receptacle, PFR power fail relay, strip heater, and thermostat. Seal all openings to prevent entrance of insects and rodents. Finish shall be polyester dry powder, electrostatically applied and baked on at 380 degrees. Fahrenheit. Interior color including front and back of all swing out doors, separation barriers and mounting backpans shall be white. Exterior color shall be Jefferson Parish approved "dark olive green". The painting process shall include five stages of metal preparation using dip tanks as follows: 1) Alkaline cleaner, 2) Clear water rinse, 3) Zinc phosphate application, 4) Clear water rinse, and 5) Inhibitive rinse to seal phosphated surfaces. Finish paint product shall be able to pass 180 deg. bend around 1/2" mandrel test with no apparent cracking or peeling. All bussing and wire shall be copper. All wire shall be stranded with locking spade pressure connectors and labeled with clip-on permanent plastic wire markers. All circuit breakers and dead front mounted devices (lights and switches) shall be equipped with engraved phenolic nameplates.

The enclosure shall be compartmentalized such that the programmable pump controller, power and telemetry sections are isolated from each other. The compartments containing the programmable pump controller, power sections and space for telemetry shall be separated by barriers behind the inner dead front door. If required, space shall be available in the pump control panel for the mounting of existing or new telemetry components (radio, battery and charger). Doors shall be hinged on the same side and shall open to greater than 90 degrees. All dead front latches are 1/4 turn adjustable with 1/8" thick latching dog and knurled knob.

The pump control panel shall house the main circuit breaker, and generator receptacle circuit breaker with approved mechanical interlock to prevent both breakers from being closed concurrently. The main circuit breaker, generator circuit breaker, and all wiring shall be located behind an interior dead front door. Interlocks and circuit breaker operation shall be possible without opening the dead front door. Elapsed time meters, indicating devices and H.O.A. switches, shall be mounted on the inside dead front door. Breaker cut-outs for breaker

toggle protrusion, to eliminate exposure to hazardous potentials, shall be supplied. A physical lock-out device shall be supplied on each motor circuit breaker.

Thermostatically controlled heating and cooling systems shall be provided, as approved by the Engineer to maintain suitable climate conditions within the control panel to provide proper operation of the panel and to comply with the contract plans and specifications.

GENERATOR RECEPTACLE

The generator receptacle shall be attached to the panel and connected to the generator receptacle circuit breaker. The generator receptacle shall be the "reversed type" such that the plug is a female fitting and the panel mounted device is a male fitting to minimize contact with a possible voltage source. Generator receptacle amperage and voltage shall be per contract documents.

TERMINAL AND DISTRIBUTION BLOCKS

Distribution blocks shall be furnished as required for "fan-out" of control power and other 120V sources within the enclosure. The blocks shall be rated 300V at a minimum of 20 amperes and sized for the conductors served. Distribution blocks shall be similar to Square D, Connectron NFT, or equal.

CIRCUIT BREAKERS

All 480 volt circuit breakers shall have interrupting capacities at 14,000 amperes. All 120 volt breakers shall be rated 10,000 amperes interrupting capacity. Circuit breakers shall be of the indicating type, providing ON, OFF and TRIPPED positions of the operating handle. Circuit breakers shall be quick-make, quick-break, with a thermal-magnetic action, except when protecting motor feeders where motor circuit protector (MCP) breakers may be used. Circuit breakers shall be the bolted on type. The use of tandem or dual circuit breakers in a normal single- pole space to provide the number of poles or spaces specified is not acceptable. All multiple-pole circuit breakers shall be designed so that an overload on one pole automatically causes all poles to open. Circuit breakers shall meet the requirements of UL and NEMA AB l. Breakers shall be Westinghouse EHD, JD, LA, MCP, or equal. All circuit breakers shall be heavy duty molded case circuit breakers conforming to Federal specification W-C-375B and shall be UL listed. A button shall be provided on the cover for mechanically tripping the breaker.

PANEL LIGHT

As a minimum, the panel light shall be a 15 to 30 watt rapid start fluorescent strip type fixture with warm white lamps. A lens or guard shall be furnished and installed over each lamp. The fixture ballast shall be capable of providing reliable

starts with ambient temperatures down to 30 degrees. Ballast noise shall not exceed 50 dBA. "Noisy" ballast shall be replaced by and at the Contractor's expense.

MOTOR CONTROL

Provide each motor (duplex or triplex) with a suitable controller and devices that will perform the functions as specified for their respective motors. Controllers shall conform to the applicable requirements of NEMA ICS, ANSI C19.1, the NEC, and UL. Anticipated horsepower ratings are shown on the contract documents. This information is for guidance only and does not limit the equipment size. When motors furnished differ from the expected ratings indicated, make the necessary adjustments to wiring, conduit, disconnect devices, motor starters, branch circuit protection, and other affected material or equipment to accommodate the motors actually installed, at no additional cost to the Owner.

Each motor control system shall be equipped with a hand-off-auto control switch, indicating lights, elapsed time meter, motor starter, control transformer with primary fuses and secondary control power fuse.

Control switches and indicating lights shall be U.L. listed oil-tight devices rated heavy duty. Provide Idec, Westinghouse, or equal.

Motor starters shall be NEMA rated with an electrically held contractor and a single reset, 3 phase, overload relay with a normally closed holding contact and a normally open isolated contact for overload alarm. Each overload shall be ambient compensated and shall trip on 600% of full load current in less than 6 seconds. Each motor starter Size 3 and larger shall be furnished with a minimum of 4 auxiliary contacts and provisions for adding 2 more. Auxiliary contacts shall be convertible, in the field, from normally open to normally closed. Provide Westinghouse A201, Allen Bradley 100, or equal. Each overload relay shall have a test trip push-button built-in and a adjustable calibrated trip with indicating dial and isolated alarm contact. There shall be an unbreakable steel operator, with insulated plastic foot (for safety) through the front door for manual reset.

Control power transformers shall be sized as shown on the plans, minimum size shall be 100VA where not designated. Provide Micron, G.E., or equal.

Unless provided in the programmable controller (PC) furnish time on delay relays for staggered start. Time delay relays are to delay the pump motors from starting upon resumption of service power, such that only one motor can be started at a time.

An elapsed running time meter for recording total elapsed running time for each motor. The meter shall be six digit, non-reset, recording in hours and tenths Meters shall be mounted to dead front with stainless steel machine screws. Sheet metal screws will not be acceptable.

NAMEPLATES

Nameplates shall be black phenolic with white lettering. Nameplates shall be stainless steel screw mounted. Glue type will not be acceptable.

PANELBOARD

Panelboard shall be circuit breaker type custom constructed to utilize minimum enclosure space with breakers as shown. Circuit breakers shall be bolted on type. The panelboard shall be furnished with phenolic nameplates. The panelboard transformer shall be dry type construction sized as shown on the plans with primary breaker protection. The panelboard transformer shall be a Jefferson 211, G.E., or equal.

PANEL LIGHTS

Furnish and install push-to-test lights to indicate status and alarm conditions locally. Engraved phenolic nameplates shall specify each light's function. Panel lights shall be full voltage IDEC ALD or equal.

PUSH-BUTTONS AND SELECTOR SWITCHES

Push-buttons, and selector switches, for non hazardous indoor dry locations shall be U/L listed oil-tight type, Westinghouse Type OT, Idec ASN, General Electric Type CR 240, Square D Class 9001, or equal. These devices shall have individual, extra large nameplates indicating their specific function.

RECEPTACLES, DUPLEX

Receptacles shall be of specification grade and of NEMA configuration and rated 2 pole, 3 wire grounding, 20 amperes, 125 volts, such as Pass & Seymour 5252, Leviton 6898, Bryant 5252, or equal. Contact arrangement shall be such that contact is made on two sides of each inserted blade. Bases shall be of ivory phenolic composition. Wire terminals shall be suitable for 10 AWG wire and shall be screw type. Receptacles shall be UL listed. The receptacles shall have corrosion resistant conducting parts of nickel-plated brass and other metal parts of stainless steel. All external and dead front receptacles shall be installed on ground fault interrupter circuits "GFCI".

RELAYS, CONTROL

Control relays shall be Potter and Brumfield KU, Square D Type KU, Idec Type RH or equal. Two form-C contacts (10A minimum) shall be provided on each relay. Provide relay energized neon lamp (inside relay case).

RELAYS, POWER FAIL

The power fail relay shall continuously monitor the three phases for power loss, low voltage, phase loss, phase reversal and have automatic reset. The power fail monitor shall have a drop-out voltage adjustment and a failure indicating LED. Provide Diversified model SLA, or equal.

RELAYS, TIME DELAY

Time delay relays shall be solid state relays with a timer adjustable over the range 1 to 60 seconds unless other ranges are indicated or required. Provide LED relay energized indicator lamp. Time delay relays shall be IDEC RTE, Agastat STA, or equal.

PROGRAMMABLE PUMP CONTROLLER (PC)

The PC shall be a microprocessor based unit with capability to accept digital and analog inputs, produce digital and analog outputs, perform local control and data manipulation functions, transmit measured and calculated values and status/alarm signals to the existing Jefferson Parish radio based SCADA system central computer system, receive command signals and configuration data from the central computer, and perform all other functions required to meet the specified performance and functional requirements of the integrated system. Each controller shall be furnished with all necessary power supplies, processors, memory, process I/O cards, serial communication ports, modems, features etc. to meet its specified functions, requirements and environmental conditions. The pump controller shall contain all of the hardware devices listed below in a single removable integrated unit, and shall be inherently capable of performing all of the features described herein without the need for any additional hardware. The PC's acceptable to be furnished under this contract shall be TESCO LIQ 5 with integral operator interface. Any proposed PC alternates or substitutions will require prior approval. Prior approval will consist of a technical proposal package including a functional PC along with sufficient detailed information specific to this project, for the owners evaluation prior to bid. Owner reserves the right to reject any or all proposals that are not in the owners best interest. Owners decision is final.

The PC shall adhere to the minimum specification requirements. The PC supplier shall submit in detail all information required to establish that the PC meets the minimum requirements set forth in the PC specification. The PC

supplier shall be prepared to demonstrate all functions specified at the Engineers request. PC's that do not meet the minimum requirements will not be acceptable.

The PC components shall employ a solid-state design. All PC processors, power supplies and I/O components shall be contained in plug-in modules. Chassis wired logic is not acceptable. The PC and any associated I/O modules shall be removable without disconnecting the I/O wiring.

The PC shall operate correctly under an ambient temperature range of -40 to +200 degrees F without requiring forced air or other special cooling measures. At minimum, each Pump Controller shall be subjected by the manufacturer to a 5 day burn-in procedure at 165 degrees F. Coatings on connectors, component leads, and other materials used in the construction of the PC shall be substantially resistant to atmospheres containing significant amounts of Hydrogen Sulfide gas and Chlorine gas. Each component shall have passed testing and be certified in writing by the manufacturer to be acceptable for use in water treatment and waste water treatment environments.

The PC shall have all of the facilities required to implement the control schemes, I/O and data base shown and specified in the Contract Plans and Documents. PCs shall have floating point math and PID controller modulating capability. The PC shall be guaranteed free from defects for a period of ten years.

Pump Controller Manufacturer: The PC shall be furnished by a manufacturer that has at least 10 years experience manufacturing its own PC's and control systems designed specifically for the water and waste water industry. The PC itself and support for the controller shall be available directly from the manufacturer.

Warranty: The PC manufacturer shall provide a 10 year warranty with the unit. This warranty shall be available in writing directly from the manufacturer before bid acceptance. The warranty shall provide for direct on-site replacement of the entire PC, complete with the original program and configuration. The replacement controller shall be available within 24 hours, without requiring that the original unit first be removed and returned to the factory.

Telephone Support: The PC manufacturer shall provide telephone support for questions related to any aspect of the controller, including general use, application-specific issues, programming, and use of the programming software. This support shall be available directly from the manufacturer at no extra charge with the purchase of a controller.

PC HARDWARE

Central Processing Unit (CPU): The PC CPU shall employ a 32 bit, 16 MHz microprocessor based architecture capable of performing all tasks necessary to

perform the specified control functions. It shall be capable of interfacing sufficient discrete inputs, analog inputs, discrete outputs, and analog outputs to meet the specified requirements plus at least 20 percent excess capacity. All PCs shall be provided to support and implement closed loop floating point and PID control which is directly integrated into the PC's control program.

Memory: RAM memory shall be (CMOS) semi-conductor memory with 1 year battery backup. The CMOS user programming memory shall be a minimum of 1Mb expandable to 2Mb The CPU shall be supplied with sufficient memory to implement the specified control functions plus a reserve capacity of 40 percent of the total provided. This reserve capacity shall be totally free from any system use.

ROM memory shall contain the Operating System, Diagnostics, Process I/O, communications and hardware support functions. Sufficient ROM memory shall be supplied to meet all specified requirements.

CPU Fault: The CPU shall provide internal fault analysis with a fail-safe mode and a dry contact output for remote location alarming, and a local indicator on the PC frame in the event of a fault within the PC.

Real Time Clock: The CPU shall employ a real time clock for event time and date stamping. The time and date stamp shall indicate year/month/day/hour/minute/seconds accurate to 1/100 second of the event trigger. The real time clock shall be capable of remote synchronization via the specified communications network. The real time clock accuracy shall be plus/minus one minute/month.

PC Housing and Bus Backplane: The PC CPU, communications, power supply, and I/O modules shall be mounted in a suitable standard housing. Modular housing slots shall be mechanically configurable to prevent insertion of incorrect modules. Each PC system employing modular housing slots shall have a minimum of 3 empty I/O module slots. The PC I/O Bus shall employ a true 16 bit data bus backplane for data transfers between I/O modules and the CPU. Serial Data bus architecture is not acceptable. Project requirements which exceed the minimum rack requirements shall utilize sufficient racks and slots to meet the I/O requirements plus three additional spare slot capacity. Additional racks employing remote I/O processors shall be provided when project I/O exceeds 12 slots.

PC Communications: The PC's shall have multiple onboard communication ports including remote I/O, RS-485 and RS-232 ports. In addition to the required communications ports a dedicated programming and diagnostics port shall be provided for portable programmer access. Each PC shall be equipped with the following communications ports:

- Two RS-232 serial communications ports (1200 - 115K Baud)
  One compatible with the specified communications media
  One compatible with the specified operator interface
- One Remote I/O Adapter port.
- One Programming and diagnostics port

Protocol Conversion: In addition to the PC's native communications protocol, software and hardwire as required, shall be implemented to employ a standard communication interface. The communication interface protocol software shall be Modbus RTU. The PC shall be capable of both master or slave RTU communications.

Power Supply: The PC power supply shall be sized to power all modules mounted in that housing and an "average module load" for any empty housing slots plus 60 percent above that total. The power supply input voltage shall be compatible with the battery back-up system. The programmable controller, associated communications devices and analog inputs shall be battery backed up for a period of eight hours.

PC Input/Output (I/O) Modules: All integral I/O housings or modules shall be suitable for hostile industrial environments as described. All I/O modules shall be isolated and conform to IEEE Surge Withstand Standards and NEMA Noise Immunity Standards. I/O shall be removable without having to disconnect wiring from the module's terminals by means of a swing-arm or plug-in wiring connector. Sufficient I/O shall be provided to meet the specified requirements plus 20 percent spare capacity.

Discrete Inputs: Discrete inputs defined as contact closure inputs from devices external to the PC module. Individual inputs shall be optically isolated from low energy common mode transients to 1500 volts peak from users wiring or other I/O Modules. The inputs shall have LED's labeled with 25 characters to indicate status of each discrete input. Signal levels shall be 24 VDC or 120 VAC.

Discrete Outputs: Discrete Outputs defined as contact closure output for ON/OFF operation of devices external to the PC module. The output modules shall be optically isolated from inductively generated, normal mode and low energy, common mode transients to 1500 volts peak. All outputs shall have LED's with 25 characters to indicate status of each output point. Output contact rating shall be 2A minimum, with a momentary surge rating of at least 20A at 120 VAC.

Analog Inputs: Analog inputs shall accept both 4 to 20 mA or 0 - 5 Volt DC signals, where an analog to digital conversion is performed with a minimum of 12-bit precision and the digital result is entered into the processor. The analog to digital conversion shall be updated with each scan of the processor and sampled every 10 ms. Analog input modules shall have a minimum of eight differential inputs each. Analog Inputs shall be differentially isolated.

Analog Outputs: Analog outputs shall be 2 wire, 4 to 20 mA DC output signals where each output circuit performs a digital to analog conversion with each scan of the processor. Each analog output module shall have four isolated output points which shall be rated for loads of up to 1200 ohms.

Analog Input/Analog Output surge protection shall be minimum 50 Joules.

OPERATOR INTERFACE

An integral operator display and keypad shall be provided to allow operator monitoring and control functions. The operator shall be capable of viewing all internal registers and status flags via a menu driven format without programming. The operator interface shall be configured to provide the following minimum display and control functions:

Analog Variable Displays: All analog variable registers shall be displayed in engineering units utilizing real numbers with a two decimal precision. All supplied analog inputs including spares shall be preconfigured and calibrated for use by merely wiring the input to the PC input card. Each analog input shall be scaleable from the operator interface and preconfigured with High and Low alarm setpoints. All analog variables including spares shall be automatically configured with out of range failure alarms.

Setpoint Displays: All setpoints shall be accessible by the operator for display and modification. Setpoints shall be displayed in engineering units utilizing real numbers with two decimal precision. The operator interface shall employ password protection such that setpoint variables may not be altered without a valid password entry. A numeric keypad shall be provided for direct numerical entry of setpoint values.

Status Displays: All status registers DI, DO and alarms shall be displayed continuously and simultaneously identifying the variable name with up to a 25 character placard for each indicator and the On/Off condition of the variable.

Alarm Handling and Display: Alarms shall be displayed utilizing a standard ISA sequence for indication and acknowledgment functions. The display shall flash the alarm condition on the current screen or via an LED bar segment until acknowledged with a valid password. Upon acknowledgment the alarm shall go to steady state until reset.

Macro/Function Keys: The operator keypad shall employ a minimum of eight macro/function keys. The operator shall be capable of utilizing the macro/function keys to invoke control changes or view commonly accessed data.

Timer and Counter Displays: All timers and counters shall be displayed identifying the timer value and timer activity (i.e. timing, not timing)

PC Diagnostics: The operator interface shall employ the means to run diagnostic programs which at a minimum shall verify and detect memory errors, program configuration errors, and communications hardware errors. The Operator Interface shall continuously display the communications traffic transmit and receive status of the PC identifying source address, destination address and message type. The communications status failed/normal shall be continuously displayed.

PC Calibration: The operator interface shall provide the means to test and calibrate analog inputs and outputs in engineering units. The operator shall be capable of calibrating all analog I/O including spares on-line.

Bar Graph Displays: The operator interface shall support a minimum of four Bar Graph Displays. Bar Graphs shall be configured for Wet Well Level and Calculated Inflow. The bargraphs shall utilize a bank of 60 high brilliance LED's at a minimum of six inches in height.

Operator Keypad: The keypad with minimum 1/2" keys shall utilize a sealed membrane overlay employing stainless steel domes for tactile feedback and positive verification the key has been depressed. The keypad and display shall be impervious to corrosive gases such as those typically found in wastewater applications. The keypad shall support a minimum of 20 keys including numeric keypad, arrow control and 8 macro keys.

PC PROGRAMMING SOFTWARE

The PC shall be programmed utilizing the PC manufacturers PC programming development software. Two copies of programming development software shall be provided to owner. The development software shall be Microsoft Windows/Windows 95 compatible. The development software shall be provided with the minimum functionality:

- PC Programming and Debugging
- PC Diagnostics
- Program Upload and Download
- On-line Communications Monitoring and Diagnostics
- Analog Input and Output Calibration
- On-line Variable Test Mode (allow user to fix register values on-line)
- Quickload of all Program, Setpoints and Calibration setup

The PC shall be programmed to meet the functional control requirements specified. In addition to the specified control programming the PC shall be capable of implementing the following control functions without additional software or hardware:

Array Logging: The PC software shall be capable of logging register variables to an array with time and date stamping to 10ms resolution. The arrays shall be configured to allow the user to establish the register to be logged, event condition to begin and end logging, size of the array, logging rate and rollover conditions for a minimum of 10 variables. The user shall select the compression rate for min/max and average in minutes or hours.

Array Retrieval: The arrays shall be retrievable via the programming software and formatted in file accessible by standard windows spreadsheet and database software packages. At a minimum the array file shall be directly accessible via Excel.

Analog Input Filtering: All analog inputs shall be filtered by an adjustable software first order lag filter. The filter constant shall be tunable via a setpoint displayed on the specified Operator Interface.

Unsolicited Messaging: The PC shall be capable of transmitting information without a poll request for peer-to-peer and quiescent communications. Data shall be transmitted based on user definable parameters for elapsed time, event trigger or differential change in analog value individually for each variable.

Approval of an alternate PC to that of the LIQ 5, does relieve the supplier from meeting all functions supplied with the LIQ 5 Programmable Controller. The functions to be met by the alternative PC shall be at the users discretion.

PUMP CONTROLLER I/O CONFIGURATION

Analog inputs: Inputs shall be provided for wet well level and station pressure (if required). As a minimum, a total of 8 analog inputs shall be provided. All inputs are 4-20 maDC.

Analog outputs: 4 outputs shall be furnished for future use.

Digital Inputs: Inputs shall be provided for primary station power (three phase) failure, wet well back up level float switches, and pump hand and auto signals for each pump. As a minimum, a total of 16 digital inputs shall be provided.

Digital Outputs: 115 VAC 5 Amp triac outputs shall be provided for the common alarm lamp, the bubbler purge compressors, the bubbler purge solenoid valves, and each pump motor starter. As a minimum, 16 - triac outputs shall be furnished. Alarm LED driver outputs shall be furnished for high and low wet well alarm, high ball float alarm, level transducer fail, communications fail, and pump fail (each pump). As a minimum, 32 LED driver outputs shall be furnished.

PUMP CONTROLLER FUNCTIONS

Pump Level Control and Alarms: Start and stop of the lift station pumps shall be controlled by the level in the wet well. There shall be an individually adjustable starter setpoint for each pump and a single stop setpoint. The pump start sequence shall be automatically alternated, with alternation on a first on/first off, first off/first on basis. If a pump fails to start, the next pump in sequence is started. High and low wet well alarms and transducer out of range alarms shall also be furnished.

Pump Run and Fail: When a pump is called to run, either through the local hand switch or automatic pump control, a pump run signal shall be generated. If flow is not sensed within an adjustable time period, a pump fail alarm shall be generated.

Station Flow: Flowsoft Plus program module calculates station flow by monitoring rise/fall rates of the wet well level (volume in gallons) and / or discharge pressure (psi). Selection of the desired "mode" of operation is determined by an operator accessible setpoint via the pump controller operator interface. Level mode calculation (mode 1) is the default if discharge pressure is not available, or the pressure transducer fails. Refer to the following chart for module operating modes.

	Station Flow Calculation
1	Influent Rate = Change of Volume + Pump Flow
2	Influent Rate = Change of Volume + Pump Flow
3	Effluent Rate = Pump Flow

Station Flow Mode 1 Operation: Wet well level is sampled by an operator accessible setpoint via the pump controller operator interface. Level variations are averaged over three (3) sample periods, while no pumps are starting, to calculate the inflow rate (gpm) based upon water storage (volume). When a pump "running" is detected, its' flow is calculated based upon the change in volume. This calculation is made every (interval selectable via the pump controller operator interface) second after the respective pump has started, with the resultant value (gpm) being used for "low flow" alarms and "efficiency" test data. The module continues to re-calculate the inflow rate two (2) seconds after a "flow calc" has completed. Station flow (gpm) is calculated by adding the inflow rate and the summed pump flow (pump 1 + 2 + 3) rate.

Station Flow Mode 2 Operation: Wet well level is sampled every (operator selectable) seconds by the pump controller. Level variations are averaged over three (3) sample periods, while no pumps are starting, to calculate the inflow rate (gpm) based upon water storage (volume). When a pump "running" is detected, its' flow is calculated based upon the change in volume. This calculation is made (operator selectable) seconds after the respective pump has started, with the resultant value (gpm) being used for "efficiency" test data. The module continues to re-calculate the inflow rate two (2) seconds after a "flow calc" has completed. Discharge pressure is sampled every (operator selectable) seconds by the pump controller, and converted to feet-of-head to determine a specific pumps' output based upon curve data stored in respective setpoints. After the initial "flow calc" is completed, respective pump flow is continuously calculated based upon discharge pressure. The resultant value (gpm) is multiplied by the "wear offset" setpoint to determine pump flow rate(s) which is also used for "low flow" alarms. Station flow (gpm) is calculated by adding the inflow rate and the summed pump flow (pump 1 + 2 + 3) rate.

Station Flow Mode 3 Operation: Discharge pressure is sampled every (operator selectable) seconds by the pump controller operator interface, and converted to feet-of-head to determine a specific pumps' output

based upon curve data stored in respective setpoints. When a pump "running" is detected, its' flow is continuously calculated based upon discharge pressure (operator selectable) seconds after the respective pump has started. The resultant value (gpm) is multiplied by the "wear offset" setpoint to determine pump flow rate(s) which is also used for "low flow" alarms and "efficiency" test data. Station flow (gpm) is based upon the summed pump flow (pump 1+ 2 + 3) rate.

Pump Efficiency: is calculated by the pump controller based upon an average of five (5) most resent output flow (run-time) to output capacity ratio values.

Station Flow Totals: of rates above the "minimum" value (operator selectable) are calculated in one (1) gallon increments by the pump controller at (operator selectable) second intervals. Three separate sets of accumulators are used for daily, monthly and cumulative total summation.

Station Flow Rate: is displayed in "bar graph" format via LED's on the pump controller operator interface face plate. The sensitivity (speed) at which the rate is displayed is controlled by a (operator selectable) value. Larger values cause slower reaction, while smaller (2 or less) result in quicker response. Addition selection for station inflow (mode 1 & 2) portion of this display is via the decimal value entered. Values greater than x.3 cause "filtering" of the inflow rate, while those less than x.3 (or 0) result in none. (e.g. 3.5 = inflow filtered)

Data Archiving: of the following register(s) will occur when its' respective value changes by the "delta value" specified in the associated (operator selectable) setpoint. Resetting, or clearing, array data is done by setting the "array clear" status on.

Bubbler Purge: The Controller shall automatically purge the reactive bell at an operator adjustable time and duration intervals. A manual purge push-button shall be installed to provide the operator capability to manually purge the level monitoring system. Bubbler compressor shall carry a written 10 year warranty.

Common Alarm: The Controller shall activate the common alarm beacon on occurrence of any of the above alarms.

SCADA Interface: The (PC) shall be "telemetry ready" to interface directly with the existing Jefferson Parish radio based SCADA System with no other external or peripheral devices. Communications shall be through a 9600 Baud radio system. System radio components shall be new, and installed in the pump control panel. Signal data, setpoints, etc. shall be stored in standardized registers for access by the SCADA system central software. All modifications to the existing central software to incorporate these sites will be performed by Jefferson Parish. Transmitted signals to include:

- LP&L system power phase fail/reversal

- pump HOA switch position
- pump running current - analog
- hi level alarm
- pump lead, lag, stop setpoints
- sump level - analog
- pump running/off
- DC power status
- station security
- air compressor run
- dry well flood (if required)

REACTIVE AIR LEVEL MONITOR SYSTEM

The level monitoring shall be by a Reactive Air System consisting of an air compressor, compression bell, 3-way solenoid valve, and level transducer. The level transducer senses the back pressure of the static air column set up in the compression bell that is periodically replenished by the purge air compressor. The compression bell shall be designed with high strength non-corrosive plastics and shaped to provide a resistance to buildup of foreign material. The specially designed programmed multi-cycle cleaning system shall prevent the compression bell from plugging while minimizing compressor run time. The reactive air control shall also provide a means of manually actuating the purging cycle when immediate purging and cleaning is necessary. One additional compressor per station shall also be mounted in the cabinet and connected with the other compressor to alternate each cycle. Compressors shall start against a 250 psi head and shall carry a written 10 year warranty.

REACTIVE AIR BACK UP - REDUNDANT CONTROL SYSTEM

Provide control system back up Reactive Air Bell with stainless steel mounting hardware. Reactive Air Bell shall be 4' long, 6 " in diameter with 1/4" parflex tubing run continuously to the pump control panel . The bottom of the bell shall be furnished with a "pointed cone" wire stainless steel mesh to prevent entry of grease or debris into the bell. A pressure switch mounted in the pump control panel shall operate both pumps on high high level and stop the pumps on low level (below the bottom of the bell). Back up control system will only operate if the programmable controller (PC) is inoperable. Mount Back up Reactive Air Bell as shown on the contract plans.

PUMP CONTROL PANEL MANUFACTURER

In order to assume electrical and control system responsibility, the above specified pump control panels shall be furnished completely wired, including all interlocking between motor control, accessory devices, and level systems. In

addition to other submitted data, the successful vendor shall submit complete wiring ladder diagrams for approval. All pump control panels furnished for this project shall be of the same manufacturer.

WARRANTY

Pump control panel components shall carry a full one (1) year replacement warranty. Programmable pump controller shall carry a ten (10) year replacement warranty.

SPARE PARTS

The pump control panel manufacturer shall furnish a complete set of recommended spare parts necessary for the first five (5) years of operation, which shall include at least the following:

1. 1 - relay for each type required, mounted in the pump control panel
2. 1 - spare set of N.O. contacts on each motor Starter
3. 1 - spare 20A circuit breaker mounted in the pump control panel
4. 1 - contactor coil and one set of power contacts for each size used.
5. 1 - programmable pump controller

Loose spare parts shall be properly bound and labeled for easy identifications without opening the packaging and suitability protected for long storage.

RADIO SYSTEM

General: The radio shall be furnished and installed in the pump control panel, and connected to the pump controller communications output port. The existing Jefferson Parish SCADA radio system operates on 4 adjacent 12.5 KHz channel splits in the 928-952 MHz band. The central station transceivers operate through antennas at the EOC tower. The radios shall meet all of FCC part 94 out-of-band emission requirements and shall be capable of transmitting data at 9600 baud, operating half duplex

Frequency Plan: Jefferson Parish has FCC licenses to operate four point-to-multipoint radio

systems on 12.5 KHz channels in the Power Radio Service on the frequencies shown below:

Master Transmitter East Bank Sewerage	952.45625 MHz
Master Transmitter West Bank Sewerage	952.46875 MHz
Master Transmitter Drainage	952.48125 MHz
Master Transmitter Water	952.49375 MHz
Remote Transmitters East Bank Sewerage	928.45625 MHz
Remote Transmitters West Bank Sewerage	928.46875 MHz
Remote Transmitters Drainage	928.48125 MHz

The R.F. equipment furnished under these specifications shall meet or exceed all current FCC requirements for point-to-multipoint radio systems and shall also meet or exceed the following minimum specifications. The R.F. equipment shall be capable of operation on the above listed adjacent 12.5 KHz channels without degradation.

The R.F. transmitters shall be directly frequency modulated by a built-in digital modem from the digital data stream furnished by the Pump Controller. The R.F. receivers shall provide a digital data stream to the Pump Controller.

Power Output (at duplex output)	+39.0 Dbm
Frequency Stability	1.5 PPM
Modulation Deviation	+3.0 KHz
Duty Cycle	Continuous

Receivers:

Receiver Sensitivity (10 to -6 BERT)	-106 Dbm
Frequency Stability	1.5 PPM
Modulation Acceptance	±3.0 KHz

The radio assembly for each site shall consist of a nonprotected transmitter, receiver, power supply and digital modem capable of operating in the 928 to 952 MHz band. Each assembly shall be capable of transmitting and receiving digital data at a rate of 9600 Baud over a 12.5 KHz FCC assigned channel. These units shall also meet the following requirements:

1. Each R.F. assembly shall be capable of operation at full performance specifications between -30 and +60 degrees centigrade with a relative humidity of 95% measured at +40 degrees centigrade.
2. Each R.F. assembly shall operate from a furnished D.C. power system. Battery tapping of 24 volt power systems to obtain 12 volts will not be permitted.

3. Each R.F. assembly shall be enclosed in a sturdy metal housing suitable for mounting on the back plate of the Pump Controller enclosure with stainless steel hardware in such a manner as to permit easy removal of the radio assembly for service and/or replacement.

Antenna systems shall be furnished in accordance with the following specifications. The antennas for all sites shall be heavy duty yagi type meeting the following minimum specifications:

Frequency Range	928 to 960 MHz
Forward Gain	10Dbd
Front-to-Back Ratio	20Db
VSWR	Vertical
Impedance	50 Ohms
Horizontal Beamwidth	60 Degrees (half power point)
Input Power	50 Watts
Wind Rating	150 MPH Survival (no ice)
Lighting Protection	Direct Ground
Input Connector	Type "N", Female

Mounting brackets shall be steel and shall be hot-dip galvanized after fabrication. All mounting hardware shall be stainless steel. Antennas shall be mounted so that the metal antenna support pole extends over the top of the antenna by a minimum of six inches (6").
Note: Antenna mast and pole is not required to be furnished with the telemetry system.

Transmission lines shall be Andrew Corporation Heliax Type LDF4-50A 1/2" diameter foam dielectric coaxial cable or approved equal. The coaxial cable shall be encased in a black polyethylene outer jacket. Connection shall be Type "N" male. If the length of cable required is not listed on the contract documents then 100' of coaxial cable is required with each antenna furnished.

Radio Manufacturer: Radio equipment shall be as manufactured by Microwave Data Systems, MDS-2310 "smart radio" or equal.

Battery back up system shall power the Controller, radio and I/O system for a minimum of 8 hours. Batteries shall be sealed gel cell type lead acid.

Specification Data
Sump Pump

1.01 GENERAL:
Contractor shall furnish all labor, materials, equipment and incidentals required to provide one (1) (Qty.) submersible sump pump as specified herein. The pump models shall be Aurora/Hydromatic SW33A1 or equal.

2.01 DESIGN CONDITIONS:
Pump shall be rated 0.3 HP, 115 volts, single phase, 60 Hertz, and operates at 1550 RPM.

3.01 OPERATING CONDITIONS:
The pump shall deliver 40 U.S. GPM at 10 feet TDK, and handle a 1/2inch solid. The curve submitted for approval shall state, in addition to head and capacity performance, solid handling capability, amp rating, and design impeller diameter. Discharge shall be 1 ½ inch.

4.01 CONSTRUCTION
Each pump shall be of the sealed submersible type incorporating features normally found in pumps furnished for the industrial market.

These features include:

1. The pump volute and motor housing shall be high quality gray cast iron, ASTM A-48, Class 30.
2. The pump shall feature a multiple strainer inlet that prevents clogging from foreign objects and provides optimum operation and reduced maintenance.
3. All external mating parts shall be machined and Buna N, 0-Ring sealed.
4. All fasteners exposed to the pumped liquid shall be 300 series stainless steel.
5. All power cords shall be water resistant UL or CSA approved, with double insulation and sized as a function of Amp. draw.

5.01 MOTOR AND SHAFT:
The stator, rotor and bearings shall be mounted in a sealed submersible type housing. Single phase motors shall be Shaded Pole, with automatic reset thermal overload protection. Full Load and Locked Rotor Amps as well as Run winding resistance shall be tabulated for each pump.

6.01 BEARINGS, SHAFT AND MECHANICAL SEAL:
A heavy duty single row ball bearing shall be required. It is permanently, continuously lubricated and cooled by the dielectric oil, which fills the motor housing. The motor shaft shall be corrosion resistant steel and sealed from the pumped liquid with a carbon ceramic mechanical seal.

7.01 IMPELLER;

The Impeller shall be a thermoplastic, eight vane, vortex design with three pump out vanes on the back side. These vanes wash out grit and stringy material that will damage the shaft and mechanical seal.

8.01 AUTOMATIC CONTROL:

Pump shall be capable of automatic operation.

9.01 FLOAT SWITCH

The Single Phase pump shall be supplied with a lift-sensitive wide-angle float switch which is sealed in a non-corrosive PVC enclosure. The switch shall be UL listed for water and sewage and QSA certified. The float switch cord shall also be fitted with a piggy-back plug that allows the pump to be operated manually without removal from the sump.

10.01 VERTICAL MECHANICAL SWITCH:

The Single Phase pump shall be furnished with a magnetic mechanical switch which is sealed in a non-corrosive PVC enclosure. The switch shall be activated by a **PVC** float sliding up and down a non-corrosive rod. The mechanical switch cord shall also be fitted with a piggy-back plug that allows the pump to be operated manually without removal from the sump.

11.01 PAINTING

All cast iron parts shall be painted before assembly with a water reducible alkyd air dried enamel. The paint shall be applied in one coat with a minimum thickness of 3 to 4 mils.

12.01 TESTING

All pumps shall be individually tested to include the following:

1. The pump and power cord shall be visually inspected for imperfections, cuts or nicks.
2. The pump shall have a ground continuity check and the motor chamber shall be Hi-potted to test for moisture content and/or insulation defects.
3. The motor and volute housing shall be pressurized and a 10 second air leak decay test run.
4. A specific amount of oil is now added. The pump is run in a fully automated, sequenced, control console, which monitors voltage, current and watts visually and electronically. The tester listens for any noise or malfunction.

CORPORATE RESOLUTION

EXCERPT FROM MINUTES OF MEETING OF THE BOARD OF DIRECTORS OF _____ INCORPORATED.

AT THE MEETING OF DIRECTORS OF _____ INCORPORATED, DULY NOTICED AND HELD ON _____, A QUORUM BEING THERE PRESENT, ON MOTION DULY MADE AND SECONDED. IT WAS:

RESOLVED. THAT _____, BE AND IS HEREBY APPOINTED, CONSTITUTED AND DESIGNATED AS AGENT AND ATTORNEY-IN-FACT OF THE CORPORATION WITH FULL POWER AND AUTHORITY TO ACT ON BEHALF OF THIS CORPORATION IN ALL NEGOTIATIONS, BIDDING, CONCERNS AND TRANSACTIONS WITH THE PARISH OF JEFFERSON OR ANY OF ITS AGENCIES, DEPARTMENTS, EMPLOYEES OR AGENTS, INCLUDING BUT NOT LIMITED TO, THE EXECUTION OF ALL BIDS, PAPERS, DOCUMENTS, AFFIDAVITS, BONDS, SURETIES, CONTRACTS AND ACTS AND TO RECEIVE AND RECEIPT THEREFOR ALL PURCHASE ORDERS AND NOTICES ISSUED PURSUANT TO THE PROVISIONS OF ANY SUCH BID OR CONTRACT, THIS CORPORATION HEREBY RATIFYING, APPROVING, CONFIRMING, AND ACCEPTING EACH AND EVERY SUCH ACT PERFORMED BY SAID AGENT AND ATTORNEY-IN-FACT.

I HEREBY CERTIFY THE FOREGOING TO BE A TRUE AND CORRECT COPY OF AN EXCERPT OF THE MINUTES OF THE ABOVE DATED MEETING OF THE BOARD OF DIRECTORS OF SAID CORPORATION, AND THE SAME HAS NOT BEEN REVOKED OR RESCINDED.

_____

SECRETARY-TREASURER

_____

DATE